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Application of the ILO International Classification of Radiographs of Pneumoconioses to Digital Chest Radiographic Images

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A NIOSH Scientific Workshop

The following content has been adapted from a presentation given at the NIOSH Scientific Workshop: Application of the ILO International Classification of Radiographs of Pneumoconioses to Digital Chest Radiographic Images.



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The NIOSH Perspective

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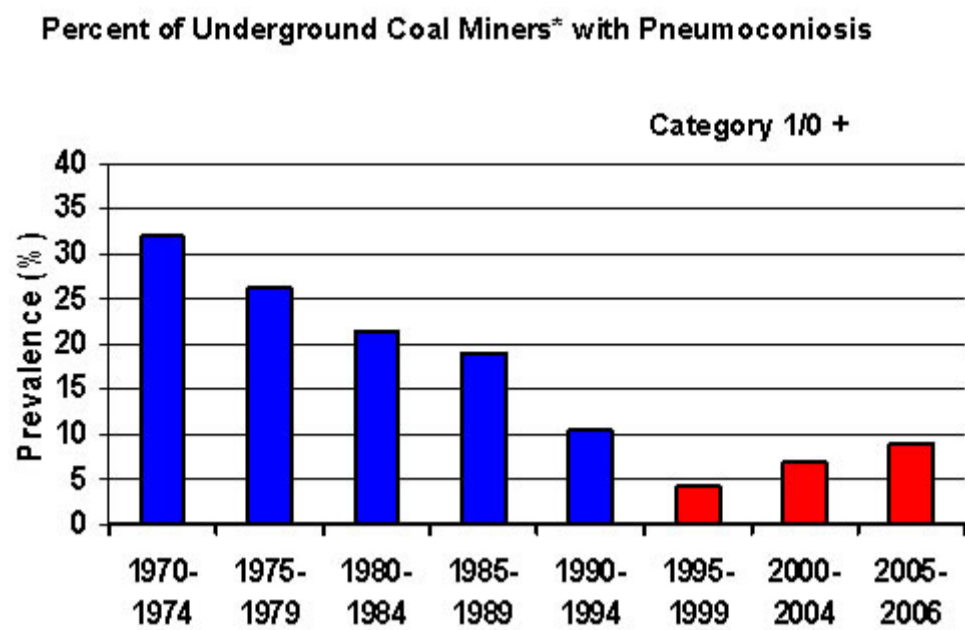
THIS IS AN IMPORTANT ISSUE.WE SINCERELY APPRECIATE YOUR TAKING THE TIME TO HELP.

The ILO Classification – Background

- “A means for describing and recording systematically the radiographic abnormalities in the chest provoked by the inhalation of dusts.”
- International Conference on Silicosis, Johannesburg, 1930
 - Modifications/revisions 1950, 1959, 1970, 1980, 2002
- “Used internationally for epidemiological research, for screening and surveillance of those in dusty occupations, and for clinical purposes. May lead to better international comparability of data concerning the pneumoconioses.”
- Object: “to codify radiographic abnormalities of the pneumoconioses in a simple, reproducible manner. Does not define pathological entities nor take into account working capacity. Does not imply legal definitions of pneumoconioses for compensation purposes.”

The Challenge: ILO Classification of Digital Chest Radiographs

Why is there a need?



* Miners who worked at least 25 years and had a NIOSH x-ray



The Challenge: ILO Classification of Digital Chest Radiographs

- Why is there a need?
 - Digital imaging market penetration
 - Soon majority of facilities exclusively digital

The Challenge: ILO Classification Of Digital Chest Radiographs

- How to assure detailed and uniform images for classification?
 - Multiple hardware systems (DR, CR)
 - Software versions, compression algorithms
 - File formats, compatibilities
 - Display terminal: resolution, perception, image manipulation
 - Display of ILO Standard Radiograph images
- How best to merge science and practicality?
 - Adequate specification of procedures, software, and file formats
 - Objective evidence for equivalence with traditional approach
 - Commercially available systems (evolving technology)

The NIOSH Perspective

- Health Surveillance Programs
- Epidemiological and Clinical Research
- Compensation and Clinical Evaluations
- Coal Workers
- OSHA Regulations
- Private Industry
- Federal Benefits
- State Workers Compensation
- Tort Liability
- International Labor Organization
- National Institutes of Health

The outcome must be defensible – There will be someone who will not like it!

The NIOSH Perspective

- A science-based but practical specification for the acquisition and formation of digital chest radiographic images
 - Assure uniformity and integrity of digital images used for classification
 - Methods, equipment, procedures, and conditions that lead to images equivalent to traditional chest radiographs for reliably demonstrating the absence, presence, and extent of dust-related pulmonary abnormalities
 - Procedures and criteria to approve facilities
 - Practical and reliable performance criteria to assure continuing image quality

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- A science-based but practical specification for the classification of digital radiographs using the ILO system
 - Procedures, image processing, display hardware, file formats and storage, including software options
 - Comparison images (i.e., ILO standard radiograph images) for classification of digital images
 - Image manipulations permissible during classification

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- Local and disseminated systems for managing digital chest images
 - Interoperability
 - Data formats, file management
 - Software and hardware compatibility
 - Secure image transfers from x-ray facilities and to readers
 - Assure confidentiality, reliable file identification
 - Durable data archives

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- Capacity to examine and approve B Readers using digital chest radiographic images
 - Remote examination
 - Preservation of the integrity of the process

- Equivalence of digital B reader examination with previous hard copy examination
 - Selection of digital examination images
 - Quality assurance and/or calibration functions

The NIOSH Perspective

- The integration of digital images into occupational practice must be done now.
- It requires the best information available and support from numerous partners.
- Thank you for agreeing to contributing your time, knowledge, and experience!

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